What is claimed is:

1. A pressure sensor comprising a silicon structure having a conductive diaphragm, the silicon structure being bonded on a substrate, which comprises an electrode covered by a dielectric film, so that the diaphragm and the electrode are facing each other and there is a gap between the diaphragm and the dielectric film, the pressure sensor measuring a pressure applied thereto by detecting capacitance according to the area of a contact face of the diaphragm which touches the dielectric film when the pressure is applied;

the concentration of an impurity at the top face of the diaphragm being equal to or greater than 1×10^{19} cm^{-3} and less than 9×10^{19} cm^{-3}.

2. A manufacturing method for a pressure sensor comprising a silicon structure having a conductive diaphragm, the silicon structure being bonded on a substrate, which comprises an electrode covered by a dielectric film, so that the diaphragm and the electrode are facing each other and there is a gap between the diaphragm and the dielectric film, the pressure sensor measuring a pressure applied thereto by detecting capacitance according to the area of a contact face of the diaphragm which touches the dielectric film when the pressure is applied, the method comprising a step of

manufacturing the silicon structure by doping the top face of the silicon with an impurity at high concentration, and providing the diaphragm by etching so that the concentration of the impurity at the top face is equal to or greater than 1×10^{19} cm^{-3} and less than 9×10^{19} cm^{-3}.

3. The pressure sensor manufacturing method according to Claim 2, wherein at least one solution selected from a group comprising KOH, NaOH, ethyene diamine pyrocatechol (EDP), and tetramethyl ammonium hydroxide (TMAH) is used as the solution for etching.

4. A pressure sensor comprising a silicon structure having a conductive diaphragm, provided by doping of an impurity and anisotropic etching, the silicon structure being bonded

on a substrate, which comprises an electrode covered by a dielectric film, so that the diaphragm and the electrode are facing each other and there is a gap between the diaphragm and the dielectric film, the pressure sensor measuring a pressure applied thereto by detecting capacitance according to the area of a contact face of the diaphragm which touches the dielectric film when the pressure is applied;

the etch pit density on the top face of the diaphragm being equal to or less than five per μm^2.

5. A manufacturing method for a pressure sensor comprising a silicon structure having a conductive diaphragm, provided by doping of an impurity and anisotropic etching, the silicon structure being bonded on a substrate, which comprises an electrode covered by a dielectric film, so that the diaphragm and the electrode are facing each other and there is a gap between the diaphragm and the dielectric film, the pressure sensor measuring a pressure applied thereto by detecting capacitance according to the area of a contact face of the diaphragm which touches the dielectric film when the pressure is applied; the method comprising a step of

manufacturing the silicon structure by doping the top face of the silicon with an impurity at high concentration, and etching the diaphragm so that the etch pit density on the top face of the diaphragm is equal to or less than five per μm^2.

6. The pressure sensor manufacturing method according to Claim 5, wherein the etching is performed using KOH solution having concentration of equal to or greater than 1 weight % and less than 10 weight %, the etch pit density on the top etching face being equal to or less than one per μm^2.

7. A pressure sensor for detecting the pressure of vehicle tires manufactured by any the methods according to Claims 2, 3, 5, and 6.